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Nebraska Monthly Economic Indicators: November 22, 2017

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Summary: *The Leading Economic Indicator – Nebraska (LEI-N)*[1] *fell by 0.24% during October of 2017. The decrease in the LEI-N, which is designed to predict economic activity six months into the future, suggests that economic growth will slow in Nebraska during the second quarter of 2018. The fall in the indicator was due to an decline in building permits for single-family homes and manufacturing hours-worked. There also was an increase in the value of the U.S. dollar in October. The increase in the value of the dollar is challenging for Nebraska exporters. In terms of positive components, there was a decline in initial claims for unemployment insurance on a seasonally-adjusted basis. There also were positive business expectations during the month. Businesses responding to the October Survey of Nebraska Business reported plans to increase sales and employment over the next six months.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during October 2017 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N fell by 0.24% in October.

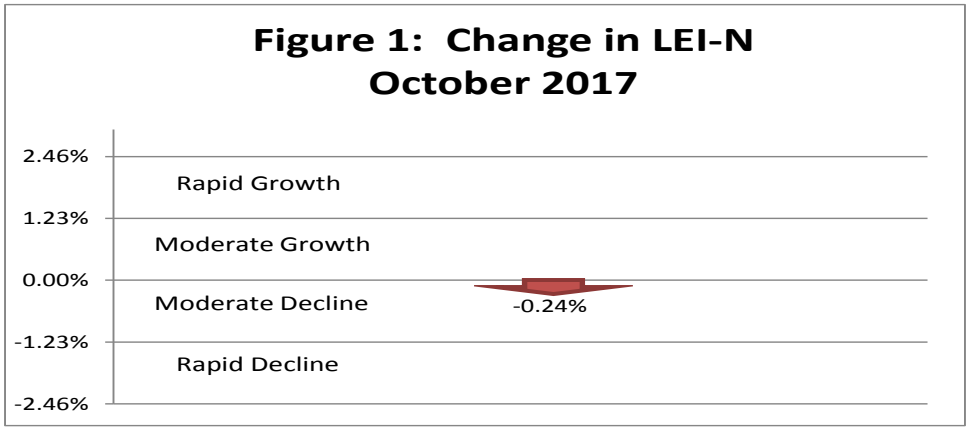


Figure 2 shows the change in the LEI-N over the last six months. The indicator rose for 5 consecutive months before its October decline. Taken together, LEI-N results for the last 6 months suggest the Nebraska economy will grow through the 1st quarter of 2018 but that grow will slow in the 2nd quarter.

[1] The author would like to thank Dr. William Walstad for helping to design the LEI-N.

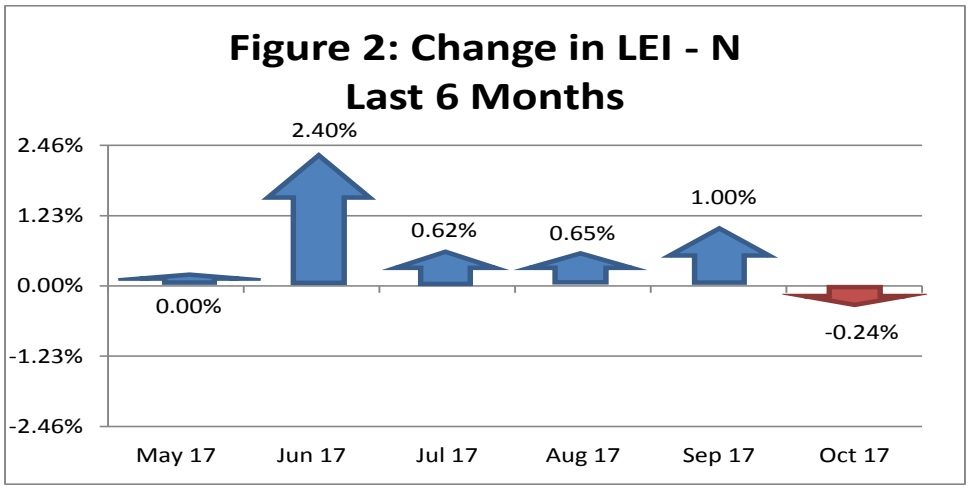
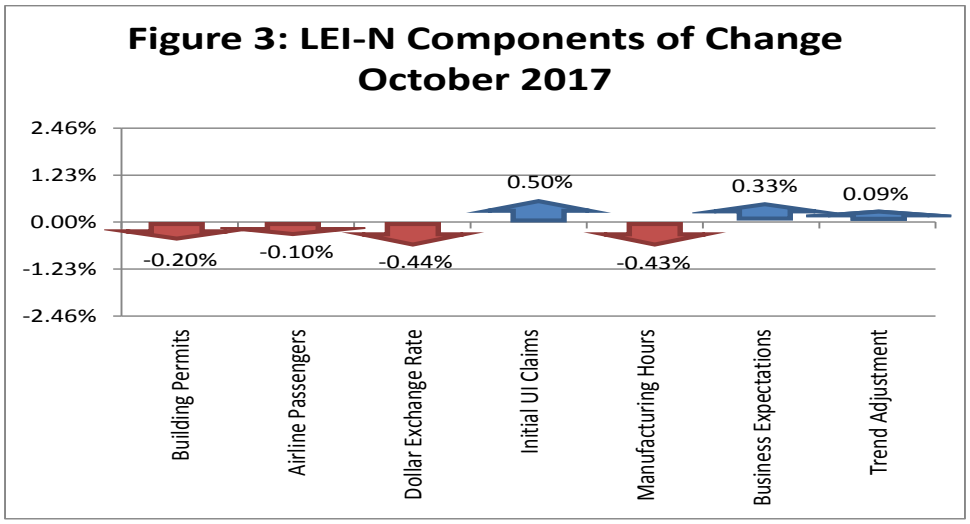


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during October 2017. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Four of six components of the LEI-N fell during October. There was a decrease in manufacturing hours-worked, airline passengers, and building permits for single family homes during the month. The value of the U.S. dollar also rose during October, which reduces the competitiveness of Nebraska exporters. Among positive components, there was a decrease in initial claims for unemployment insurance on a seasonally-adjusted basis. Business expectations also were positive as respondents to the October *Survey of Nebraska Business* predicted growth in both sales and employment at their businesses over the next six months. Note that the trend adjustment component pictured in Figure 3 is discussed on page 5.



Coincident Economic Indicator – Nebraska

The Coincident Economic Indicator - Nebraska (CEI-N) is a measure of the current size of the Nebraska economy. The CEI-N fell by 0.41% during October 2017, as seen in Figure 4.

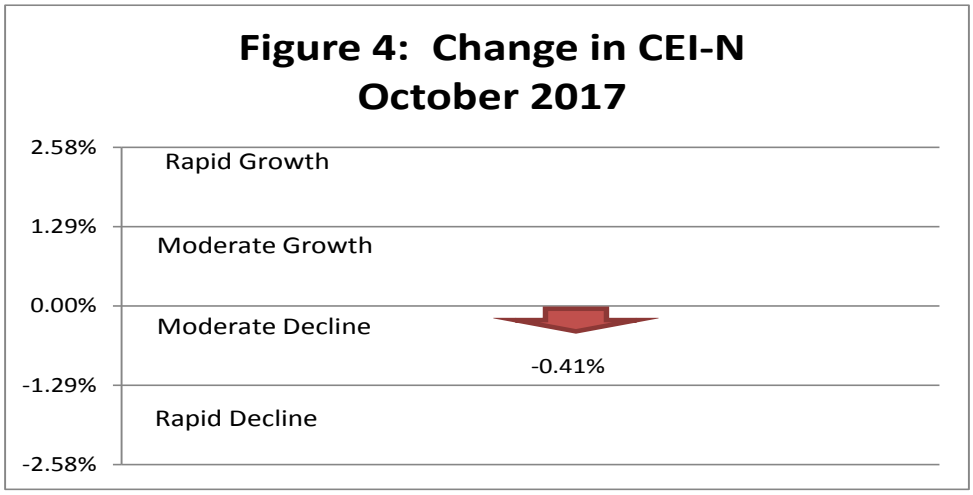
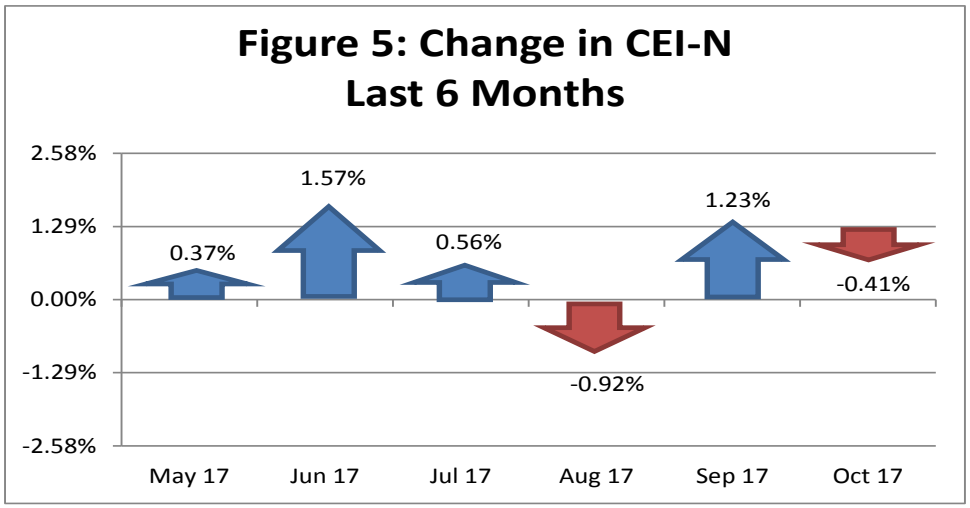


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N rose in May and June of 2017 but has been mixed over the last 4 months. However, increases in July and September have been larger than declines in August and October.



Three of four components of the CEI-N fell during October (Figure 6). There was a decrease in electricity sales on a seasonally-adjusted basis. Agricultural commodity prices also fell and there was a modest decline in business conditions as reported by respondents to the October *Survey of Nebraska Business*. Real private wages was the rising component, reflecting an increase in weekly hours-worked and real hourly wages. A detailed discussion of the components of the CEI-N and LEI-N can be found at www.cba.unl.edu in *Technical Report: Coincident and Leading Economic Indicators- Nebraska.*

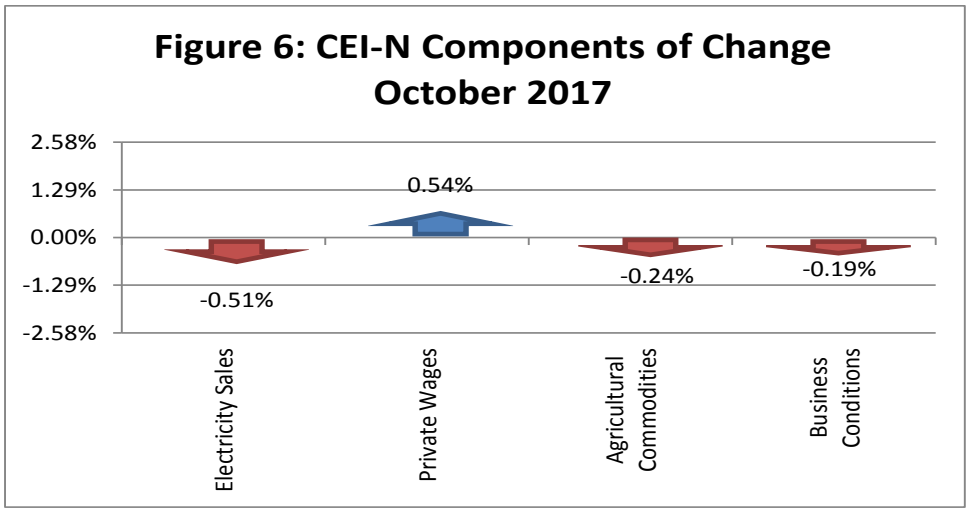
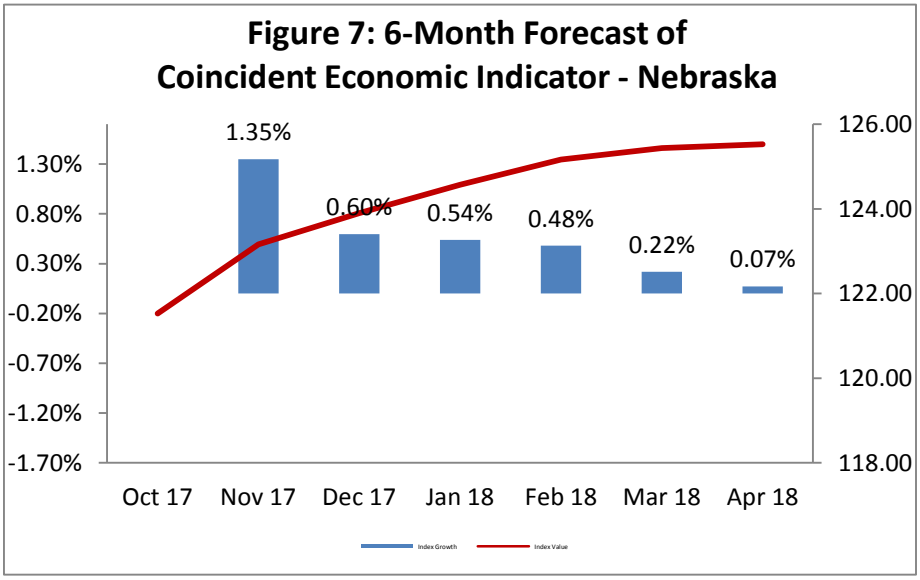


Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to grow through March 2018 but growth will be slow in April. These expectations are consistent with the changes in the LEI-N over the last six months (Figure 2).



Weights and Component Shares

Table 1 shows the weights used to aggregate the individual components into the LEI-N and CEI-N. The weights are the inverse of the "standardized" standard deviation of each component variable. The term standardized simply means that the inverse standard deviations are adjusted proportionately to sum to 1. This weighting scheme makes sense since individual components that are more stable have smaller standard deviations, and therefore, a larger inverse standard deviation. A large movement in a typically stable economic series would provide a more powerful signal of economic change than a large movement in a series with large month-to-month fluctuations.

Table 1: Component Weights for LEI-N and CEI-N

Leading Economic Indicator - Nebraska				Coincident Economic Indicator - Nebraska			
Variable	Standard Deviation	Inverse STD	Weight (Inverse STD Standardize)	Variable	Standard Deviation	Inverse STD	Weight (Inverse STD Standardize)
SF Housing Permits	13.3689	0.0748	0.0352	Electricity Sales	4.6492	0.2151	0.1604
Airline Passengers	3.3297	0.3003	0.1413	Private Wages	1.7927	0.5578	0.4160
Exchange Rate	1.2016	0.8322	0.3914	Agricultural Commodities	3.3342	0.2999	0.2237
Initial UI Claims	10.8602	0.0921	0.0433	Survey Business Conditions	3.7298	0.2681	0.1999
Manufacturing Hours	1.6852	0.5934	0.2791				
Survey Business Expectations	4.2845	0.2334	0.1098				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between September and October of 2017. Weights (from Table 1) are multiplied by the change to calculate the contribution of each component. Contributions are converted to percentage terms and summed. Note that in Table 2 a trend adjustment factor is utilized in calculating LEI-N. This is done because LEI-N historically under-predicts CEI-N by 0.09% per month. The U.S. Leading Economic Indicator also has a trend adjustment.

Table 2: Component Contributions to the Change in Leading Economic Indicator

Leading Economic Indicator - Nebraska						
	Component Index Value (May 2007=100)					
Component	Current	Previous	Difference	Weight	Contribution	Percentage Contribution (Relative to Previous LEI-N)
SF Building Permits	65.55	73.26	-7.72	0.04	-0.27	-0.20%
Airline Passengers	100.84	101.85	-1.01	0.14	-0.14	-0.10%
U.S. Dollar Exchange Rate (Inverse)	87.08	88.65	-1.57	0.39	-0.61	-0.44%
Initial Unemployment Insurance Claims (Inverse)	151.80	135.74	16.05	0.04	0.70	0.50%
Manufacturing Hours	94.08	96.21	-2.13	0.28	-0.59	-0.43%
Survey Business Expectations[1]	54.19		4.19	0.11	0.46	0.33%
Trend Adjustment					0.13	0.09%
Total (weighted average)	137.72	138.06			-0.34	-0.24%

[1] Survey results are a diffusion Index, which is always compared to 50

Table 3: Component Contributions to the Change in Coincident Economic Indicator

Coincident Economic Indicator - Nebraska						
	Component Index Value (May 2007=100)					
Component	Current	Previous	Difference	Weight	Contribution	Percentage Contribution (Relative to Previous CEI-N)
Electricity Sales	168.07	171.96	-3.89	0.16	-0.62	-0.51%
Private Wage	115.23	113.66	1.57	0.42	0.66	0.54%
Agricultural Commodities	116.80	118.12	-1.32	0.22	-0.30	-0.24%
Survey Business Conditions[1]	48.84		-1.16	0.20	-0.23	-0.19%
Total (weighted average)	121.52	122.02			-0.50	-0.41%

[1] Survey results are a diffusion Index, which is always compared to 50

Performance of the LEI-N and CEI-N

Further information is available on both economic indicators to demonstrate how well the CEI-N tracks the Nebraska economy and how well the LEI-N leads the CEI-N. Figure 8 shows the value of CEI-N and the real gross state product (real GDP) in Nebraska for 2001 through 2016. Annual real gross state product data is provided by the Bureau of Economic Analysis, U.S. Department of Commerce, and quarterly values were estimated using quarterly earnings data. CEI-N closely tracks Nebraska real GDP for the period. The correlation coefficient between the two pictured series is 0.94.

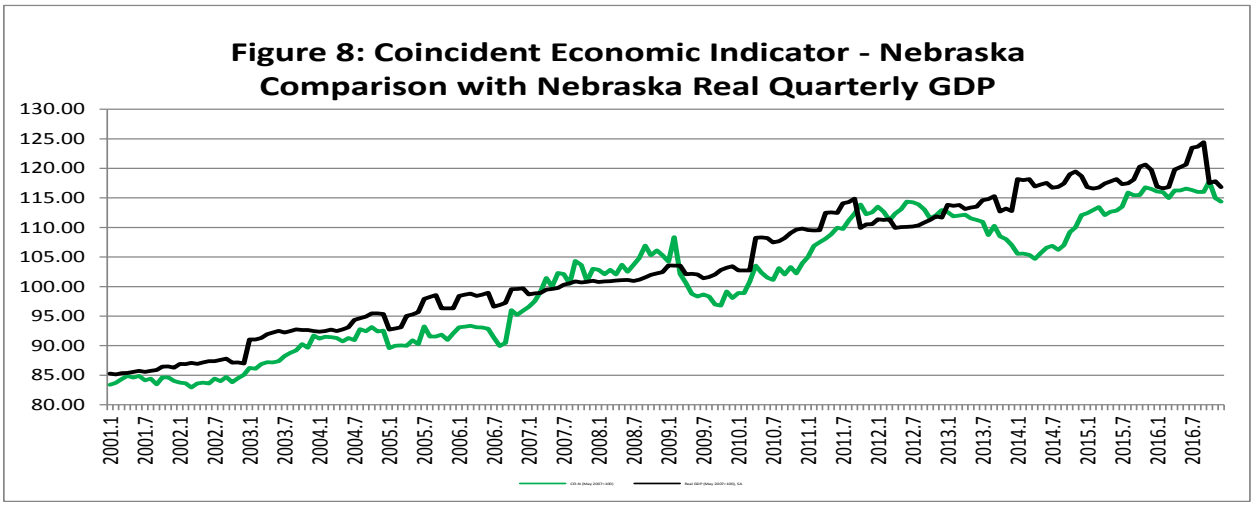


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months earlier) with the actual movement in CEI-N. In Figure 9, predicted values using the LEI-N closely track trends and movement in the CEI-N. The correlation coefficient between CEI-N and six-month forward values of LEI-N is 0.91.